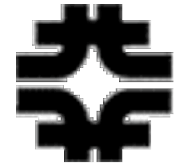




MICE Analysis



Yağmur Torun, IIT
Muon Group Meeting
Nov 28, 2005 - Fermilab





Context



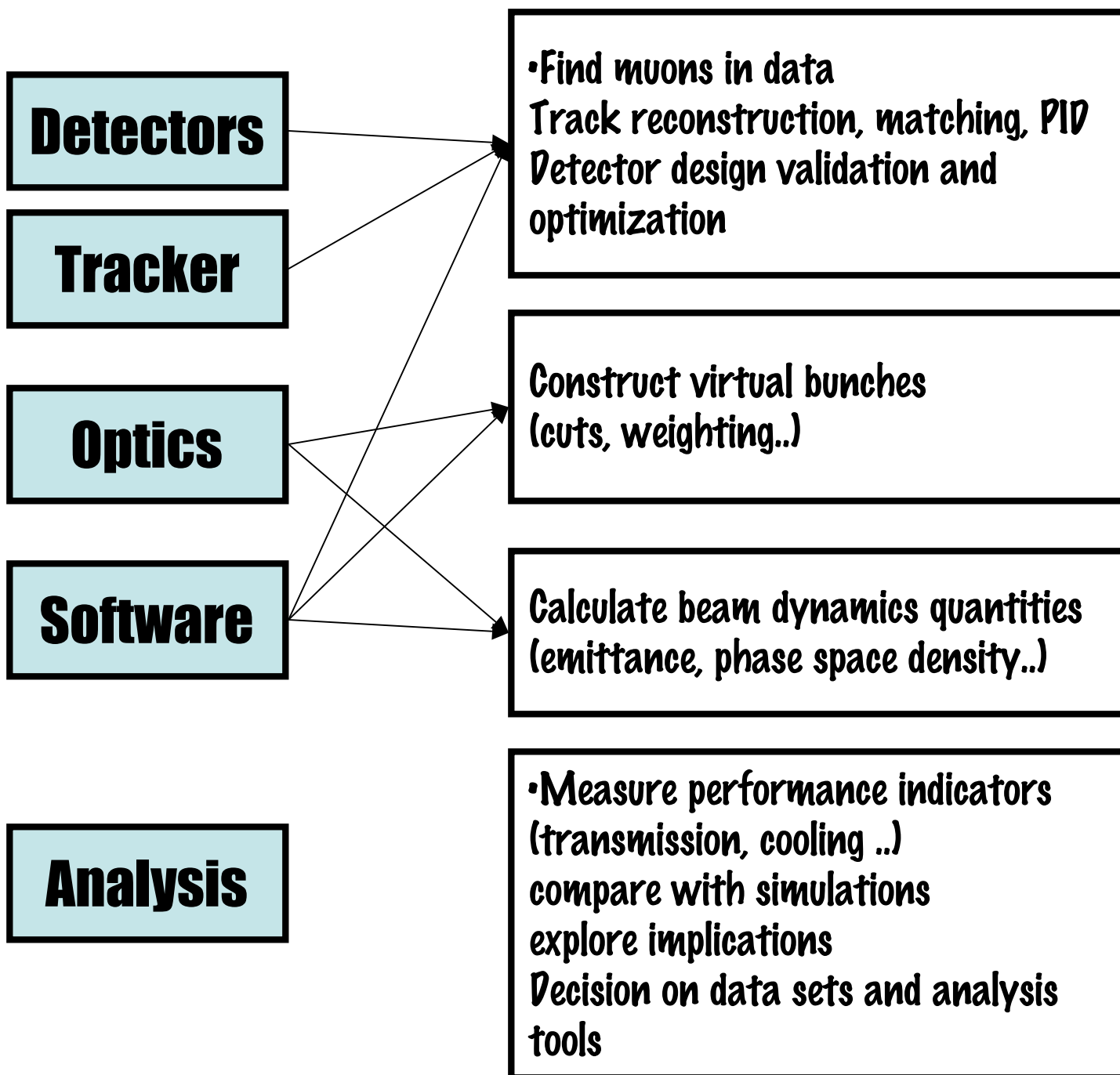
- **MICE is an accelerator R&D experiment**
 - usual kinematics issues common to HEP experiments (momentum resolution, efficiency and bias in PID..)
 - but no interaction vertices, branching ratios, cross sections, rare event searches..
 - all we want is a set of muons
 - **the beam is the experiment**
 - tricky analysis
 - **virtual bunches**
 - beam dynamics in nonlinear transport
- **MICE is the flagship of Neutrino Factory R&D**
 - Our success in building/operating/verifying one cooling channel is much more important than which one we build



Group Goals and Interface to Rest of MICE



- **MICE Analysis Forum formed at cm1 2 (NuFact05)**
- **Study how to achieve the physics goals of MICE**
 - ✓ **Run plan: what sets of measurements do we need to convince ourselves and others that ionization cooling is feasible**
 - ✓ **Cooling channel: acceptance and required alignment tolerances (Optics, engineering groups)**
 - **Parameters that need to be monitored/controlled and associated tolerances (Controls/DAQ)**
 - ✓ **Detector performance requirements (Tracker, PID)**
 - ✓ **Analysis tools and techniques (Software)**
- **Identify and follow up on issues, link to/document existing work**





Set up as a working group



- All material under: <http://mice.iit.edu/analysis/forum.html>
- And for discussion: mice-analysis@mice.iit.edu
- “Bi-weekly” phone meetings
 - Aug 5 [Run plan (Blondel)]
 - Aug 19 [Emittance analysis (Rogers)]
 - Sep 15 [Detector performance]
 - Tracker resolution (Ellis)
 - Time-of-flight resolution (Sandström)
 - Sep 30 [Cooling channel]
 - Optics (Bravar)
 - Beamline matching (Rogers)
 - MANX (Yonehara)
 - Dec 1?
 - Physics parameter list for monitoring/controls [Cummings]
 - Longitudinal phase space issues [?]
 - Beam and data rate considerations [Torun]

Status and Plans

- The Analysis Forum should be transformed into a working group in the next few months
 - in-depth discussion already in progress (run plan, beam and detector performance requirements..)
 - some well-defined questions to answer (justify TOF2 resolution ..)
 - will start giving assignments on other specific issues
 - meeting format will change slightly
 - single theme in each meeting → review of progress in different areas
- Summary of progress next time